Claims

1. Injection nozzle (1) for a common-rail injector, having a nozzle needle (4) closing off a nozzle opening (3) of the injection nozzle (1), biased by way of a spring (2), wherein the spring (2) is disposed between a housing shoulder (5) and a contact surface (6) of the nozzle needle (4),
characterized in that
a piezo-element (7) is provided between the spring (2) and the housing shoulder (5) or between the spring (2) and the contact surface (6).

2. Device, particularly as recited in claim 1,
characterized in that
the piezo-element (7) is configured to be ring-shaped or as a toroid having a first face (7.1) and a second face (7.2) lying opposite the first face (7.1), and has a first electrical connector (8.1) in the region of the first face (7.1), and a second electrical connector (8.2) in the region of the second face 7.2.

3. Device as recited in claim 1 or 2,
characterized in that

the setting path x of the nozzle needle (4) can be determined by way of the function

$$x = \frac{Q}{d_p D}$$

where Q represents the charge of the piezo-element (7), d_P represents the piezoelectric coefficient, and D represents the spring stiffness.

4. Device as recited in one of the preceding claims, characterized in that
the displacement charge Q can be determined by means of integration of the displacement current of the piezo-element (7) during a movement.

5. Device as recited in one of the preceding claims, characterized in that
the intermediate values for the setting path x can be interpolated between two end positions of the setting path x of the nozzle needle (4).

6. Device as recited in one of the preceding claims, characterized in that

the housing shoulder (5) and the piezo-element (7) have a common opening (9) disposed concentric to the piezo-element (7).